APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/023,321	12/18/2001	Michael S. Milillo	2001-053-ICE	2261

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EXAMINER
CHERY, MARDOCHEE

ART UNIT	PAPER NUMBER
2188	

DATE MAILED: 05/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/023,321	MILILLO ET AL.
	Examiner	Art Unit	
	Mardochee Chery	2188	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 February 2005*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-6 and 9-22* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-6 and 9-22* is/are rejected.

7)☒ Claim(s) *1* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 February 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   This Office Action is in response to applicant's communication filed on February

25, 2005 in response to PTO Office Action mailed on December 2, 2004. The

applicant's remarks and amendments to the claims and/or the specification were

considered with the results that follow.

2.   The newly added limitations introduced into independent claims 1, 6, and 17, do

not affect the scope of the rejection because the recitation "the cache comprises a

location identifier table for storing at least one storage device location identifier, and a

virtual address table for storing a plurality of virtual addresses" does not remove the

references from reading upon the claims because the system of Belsan et al. discloses

at col.2, lines 15-20, "a cache memory system comprising a data copy apparatus which

makes a copy of selected data record with a set of pointers (identifiers) to reference the

same physical memory location". Clearly, the data copy apparatus to make a copy of a

record and generate pointers (identifiers) to reference memory locations includes at

least a "pointer table" (i.e. location identifier table) that stores at least one "pointer" (i.e.

storage device location identifier). This is further evident in Fig.2, at col.8, lines 64-68,

and col.9, lines 1-3, where Belsan et al. discloses "a plurality of pointers (identifiers) in

the mapping tables, each of which identifies the exact location of an identified data

record; there is a corresponding pointer stored in the mapping tables that identifies the

location". Furthermore, at col.2, lines 30-40, Belsan et al. discloses "virtual memory mapping tables to record all the virtual addresses".

3.   Claims 1-22 have been presented for examination in this application. In response to the last Office Action, claims 1, 6, and 17, have been amended. Claims 2-3, and 7-8, have been canceled. As a result, claims 1, 4-6, and 9-22, are now pending in this application.

4.   The objection to the drawings has been withdrawn due to the amendment filed on February 25, 2005.

5.   The objection to claims 1-11 has been withdrawn due to the amendment filed on February 25, 2005.

6.   The objection to claim 1 followed by the rejection of claims 1, 4-6, and 9-22 as in the Office Action mailed on December 2, 2004, is respectfully maintained and reiterated below for applicant's convenience.

Response to Arguments

7.   Applicant's arguments filed on February 25, 2005, have been fully considered but they are not persuasive.

Regarding Applicant's argument on page 9, paragraph 2, that "the hash table and collision list of the 391 patent are not the same as the virtual address table and location identifier table of Applicant's claimed invention", Examiner respectfully traverses Applicant's arguments for the following reasons:

Examiner would like to suggest that Applicant carefully review the Office Action mailed on December 2, 2004. Furthermore, Examiner would like to point out that "the hash table and the collision list" disclosed by Belsan et al. was never relied upon for the teaching of "virtual address table and location identifier table" claimed by Applicant (See Prior Office Action, Page 4-6).

Additionally, it is clearly manifest that Belsan et al. discloses at col.2, lines 15-20, "a cache memory system comprising a data copy apparatus which makes a copy of selected data record with a set of pointers (identifiers) to reference the same physical memory location". Clearly, the data copy apparatus, to make a copy of a record and generate pointers (identifiers) to reference memory locations includes at least a "pointer table" (i.e. location identifier table) that stores at least one "pointer" (i.e. storage device location identifier). This is further evident in Fig.2, at col.8, lines 64-68, and col.9, lines 1-3, where Belsan et al. discloses "a plurality of pointers (identifiers) in the mapping tables, each of which identifies the exact location of an identified data record; there is a

corresponding pointer stored in the mapping tables that identifies the location".

Furthermore, at col.2, lines 30-40, Belsan et al. discloses "virtual memory mapping tables

to record all the virtual addresses". Hence, Applicant's argument directed to "the hash

table and collision" of Belsan et al. is considered moot and flawed.

Claim Objections

8.   Claim 1 is objected to because of the following informalities:

At line 12, it appears that "strorage" should be changed to --storage--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

9.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10.   Claims 1, 4-6, and 9-22 are rejected under 35 U.S.C. 102(b) as being anticipated

by Belsan (US 5,379,391).

As in claim 1, Belsan discloses a data storage system having a plurality of virtual

addresses, each associated with a data object (Column 6, lines 30-59), the data storage

system comprising:

a plurality of storage devices, each data object being stored at a storage device location, each storage device location having a unique identifier (i.e. logical address) (Fig. 1, element 103-1; column 7, lines 48-66); and a cache for storing a data object associated with a virtual address (Figs. 1 and 4, element 113; column 6, lines 30-31), wherein a first data object corresponding to a first virtual address is staged into the cache, and a pointer is generated for pointing to the first data object staged in the cache when a storage device location identifier associated with a second virtual address matches a storage device location identifier associated with the first virtual address (column 3, lines 17-24; column 13, lines 42-59).

Belsan teaches that information relating multiple virtual addresses to a unique data object in the cache is loaded into the cache directory, where it is apparent that such information is obtained from a copy table (Column 10, lines 35-68). Belsan further teaches a system comprises:

a location identifier table for storing a storage device location identifier (i.e. logical address) (Column 10, line 61); and a virtual address table for storing a plurality of virtual addresses (Column 10, lines 62 and 66).

Furthermore, Belsan discloses the cache comprises a location identifier table for storing at least one storage device location identifier, and a virtual address table for

storing a plurality of virtual addresses (See section "Response to Arguments" supra;

col.2, lines 15-20; Fig.2, at col.8, lines 64-68, and col.9, lines 1-3; col.2, lines 30-40).

As in claim 4, Belsan discloses that the data storage subsystem comprises a disk

subsystem (Fig. 1, elements 102-1 and 103-1), the plurality of storage devices

comprises a plurality of disk storage devices (Fig. 1, element 103- 1) each virtual

address comprises a virtual track address (Column 7, lines 55-58; column 10, lines 23-

25), and each storage device location identifier comprises a track number (Column 7,

lines 58-59), where it is understood that a logical sector address comprises a logical

track number (Column 6, line 64 to column 7, line 5).

As in claim 5, Belsan discloses that the pointer comprises as entry in a cache

directory, the cache directory entry comprising a location in the cache of a segment

storing data associated with a data object shared by the first and second virtual address

(Column 3, lines 17-24), where it is understood that the hash table and collision list of

the cache memory comprise a directory utilized to lookup entries in the cache.

Claims 6, and 9-10 are rejected using the same rationale as for the rejection of

claims 1, and 4-5, respectively as above.

Claim 11 is rejected using the same rationale as for the rejection of claim 1,

above, noting that the copy table of Belsan links the first virtual address with the location

identifier, and the second virtual address is linked to the first virtual address (Column 10, lines 61-62 and 64).

Claim 12 is rejected using the same rationale as for the rejection of claim 1 above.

Claim 13 is rejected using the same rationale as for the rejection of claim 1 above.

Claim 14 is rejected using the same rationale as for the rejection of claims 11 above.

Claim 15 is rejected using the same rationale as for the rejection of claim 4 above.

Claim 16 is rejected using the same rationale as for the rejection of claim 5 above.

Claims 17-22 are rejected using the same rationale as for the rejection of claims 11-16, respectively as above.

Conclusion

11.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

12.   When responding to the office action, Applicant is advised to clearly point out the

patentable novelty that he or she thinks the claims present in view of the state of the art

disclosed by references cited or the objections made. He or she must also show how

the amendments avoid such references or objections. See 37 C.F.R. 1.111(c).

13.   When responding to the office action, Applicants are advised to provide the

examiner with the line numbers and page numbers in the application and/or references

cited to assist the examiner to locate the appropriate paragraphs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mardochee Chery whose telephone number is (571) 272-4246. The examiner can normally be reached on 8:30A-5:00P.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Manonama Padmanabhan can be reached on (571) 272-4210. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

May 6, 2005

/M C

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